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AUTHOR Eagly, Alice H.; Wood, Wendy
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ABSTRACT

The relatively simple question of whether sex differences exist has evolved into the more theoretically interesting question of why sex differences occur. This transition has come about because of the meta-analytic investigations of sex differences in social behavior which established sex difference trends in a variety of social behaviors. Many psychologists have questioned the validity of these meta-analytic generalizations since they violate many of the concepts in our textbooks and violate the popular view that sex differences exist only in the minds of perceivers. This role analysis focuses on gender roles, socially constructed rules about male and female behavior. Role theory is in harmony with the overall sex differences established in meta-analyses, tending to be consistent with the normative expectations that women should be communal and men agentic. To account for variability in findings about sex differences, a theory should suggest moderator variables that specify social settings that limit and accentuate sex differences. Meta-analysis is suited to the detection of such interactions between sex and situational variables when the studies differ in theory-relevant aspects of their social settings. Sex differences in behavior may appear stronger in laboratory than in natural settings. Meta-analytic studies should enable development of more valid generalizations about women and men. (ABL)

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Explaining Sex Differences in Social Behavior: A Meta-Analytic Perspective

Alice H. Eagly and Wendy Wood

Purdue University Texas A&M University

During the ten or so years that meta-analytic techniques have been applied to the study of sex differences, the kinds of questions addressed by meta-analysts in this research area have expanded considerably. The relatively simple question of whether sex differences exist has evolved into the more theoretically interesting question of why sex differences occur. To explain this transition, we will sketch the relatively short history of meta-analytic investigations of sex differences in social behavior.

A Short History of Meta-Analytic Studies of Sex Differences

A highly influential investigation of the existance of sex differences in all areas of psychological research was published in the mid seventies by Maccoby and Jacklin (1974). Although their review was limited mainly to studies of children, its conclusions were widely generalized by textbook authors and other psychologists to suggest that there is little scientific evidence for sex differences in any social behavior except for aggression. Even though Maccoby and Jacklin reserved judgment about whether the sexes differ in several classes of social behavior, the overall conclusion widely accepted in the scientific community became that sex differences are few and when they occur, they are very small in magnitude.

This verdict struck some social psychologists as premature, in part because Maccoby and Jacklin had accessed only a very small proportion of the available

research on adult social behavior. In addition, just as the Maccoby and Jacklin work was meeting widespread acceptance, new methods for aggregating research findings became available. Initial applications of these new, meta-analytic techniques by Judith Hall (1978) and Harris Cooper (1979) in the late 1970s raised serious questions about some of Maccoby and Jacklin's conclusions. Other meta-analyses followed quickly in the 1980s and established overall sex-difference trends in a variety of social behaviors--in conformity and persuasion, helping behavior, aggression, numerous aspects of nonverbal behavior, various aspects of small-group behavior, and, more recently, in self-reported life happiness and the tendency for leaders to adopt a democratic style (see reviews by Eagly, 1987, and Hall, 1984; also Eagly & Johnson, 1988; Wood, 1987; Wood, Rhodes, & Whelan, 1988).

Many psychologists have questioned the validity of these meta-analytic generalizations. After all, conclusions in support of sex differences violate many of the generalizations now enshrined in our textbooks and contradict the popular view that sex differences exist only in the minds of perceivers--the view that they are "mere stereotypes." Validity issues are many-sided, and we cannot address them fully here. Suffice it to say the most commonly mentioned sources of potential invalidity do not justify a general rejection of the findings of meta-analyses. For example, one source is a publication bias in favor of significant findings, which presumably has prevented null sex-difference findings from being reported in scientific journals. Publication bias turns out to be a much less serious problem than commonly believed because sex-difference findings are typically peripheral to the main hypotheses of social psychological studies, and their direction and significance therefore

have little to do with the publishability of studies.

A different basis for rejecting the conclusion that meta-analyses have established the presence of sex differences is the view that the aggregated sex-differences are in fact extremely small. This magnitude issue is also many-sided. But it is interesting to note that the outcomes of meta-analytic studies on hypotheses other than sex differences tend to obtain average findings in the same range as those found for sex differences. Therefore, if we dismiss sex-difference findings as trivial, most of the rest of what is written in social psychology textbooks must be dismissed as trivial also. We maintain that sex-difference findings are not particularly small and suspect that many differences are large enough to be noticeable in natural settings and to have non-trivial implications for daily life.

The important task now is to account for these findings, and there is no shortage of theories of sex differences. We believe that the sex-difference findings displayed in meta-analyses on social behavior lend themselves particularly well to a perspective that emphasizes social roles.

A Social-Role Interpretation of Sex Differences

This role analysis focuses on gender roles, which we define as those shared expectations about appropriate conduct that apply to individuals solely on the basis of their socially identified sex. Research on gender stereotypes has consistently documented the existence of such socially constructed rules about male and female behavior. The content of these rules can be summarized in a very general way in terms of differences on two dimensions--the communal and the agentic. Women are expected to be communal--that is, friendly, unselfish, and concerned with others. Men are expected to be agentic--that is, independent,

masterful, and competent. These role expectations are thought to arise from the distribution of women and men into different social roles in society--in particular, the assignment of child-rearing and other domestic work to women and the tendency for women and men to carry out different types of paid employment.

Role theory of course assumes that sex differences are in part caused by the tendency of people to behave consistently with their gender roles. It also adknowledges that one's personal history of enacting social roles is an indirect cause of sex differences because of the influence that these experiences have on one's skills and attitudes. Thus, sex-diffferentiated prior experiences cause men and women to have somewhat different skills and attitudes, which then cause them to behave differently. This role-theory view of the causes of sex differences is summarized in our figure (display Figure 1).

Meta-Analysis and the Detection of Moderator Variables

Role theory is in harmony with the overall sex differences established in meta-analyses because they tend to be consistent with the normative expectations that women should be communal and men agentic. Thus, we have found, for example, that women tend to conform more than men, particularly in settings where opinions will be conveyed to the influencing agent; we have found that men offer help to others more than women and women receive help more than men, and that men are more aggressive than women (Eagly, 1987; Eagly & Crowley, 1986; Eagly & Steffen, 1986).

In addition to showing overall evidence for sex differences, these reviews establish that the magnitude of the findings varies across studies. Typically, some studies produce large differences, most produce smaller differences, a few produce reversals of the typical direction. Such inconsistencies are evaluated

by tests of homogeneity of effect sizes. Because such tests have rejected the hypothesis of homogeneity for the various types of sex differences we have mentioned, reviewers have faced a new and challenging problem--explaining variability in the findings. To account for this variability, a theory should suggest certain moderator variables that specify social settings that limit sex differences and other settings that accentuate them. Meta-analysis is suited to the detection of such interactions between sex and situational variables when the studies that are reviewed differ in theory-relevant aspects of their social settings. Meta-analysts proceed by coding these features of experiments and then using statistical tests such as Hedges and Olkin's (1985) categorical models to determine whether these features account for significant variability in study outcomes.

Our own meta-analyses have yielded several examples of this moderator variable approach. For example, in the area of helping behavior, Eagly and Crowley (1986) anticipated that the general tendency for men to help strangers more than women do would be enhanced by the presence of an audience. Other people are ordinarily expected to support widely held social norms about male heroism and chivalry. Indeed, the appropriate categorical model established that the overall tendency for men to help more than women was stronger in the presence of an audience. In addition, the emphasis that the male gender role places on assertive and controlling qualities suggested that men would be especially more helpful than women when helping required as assertive intervention (for example, bystander intervening in an emergency situation) rather than a more acquiescent response (for example, a monetary contribution in response to a request for a charity donation). Indeed, the tendency for men to

help more than women appears to increase with the assertiveness of the helpful act (Eagly & Crowley, 1986).

In a meta-analysis on group performance, Wood (1987) theorized that the gender role expectations that men be relatively task-oriented and women relatively concerned with interpersonal relations might favor sex-differentiated contributions in small groups. Men apparently specialize in behavior directed to task completion and women in social activity. Therefore, women's performance should be particularly strong for tasks that are interpersonally complex. Indeed, all-female groups did perform especially well, compared with their performance as individuals, in tasks requiring complex social interaction.

Meta-Analysis and the Examination of Mediating Variables

The social role perspective also specifies certain process variables that should mediate obtained sex differences. We have already noted the importance that role theory accords to sex-differentiated skills and attitudes. Measures of such processes are not typically retrievable directly from research studies.

However, features of experimental design sometimes can be informative. For example, in Wood's (1987) meta-analysis on sex differences in group performance, many of the original studies reported sex differences in individual performance at the experimental tasks. A sex difference in individual performance plausibly indicates that men and women differ in skills or attitudes relevant to task completion. The sex difference obtained in individual performance in this research revealed that the experimental tasks and settings favored men's abilities and interests. This individual sex difference then provided a context in which to interpret any sex differences obtained in group-level performance.

It is rare, however, that meta-analysts can code features of studies to assess mediating variables. More often, judges can make process-relevant discriminations about studies--for example, they can give their own attitudes and beliefs or report their own level of skill in relation to the behaviors that were elicited in experiments.

Our mediating-variable argument implies first that male and female judges differ in their ratings of relevant aspects of the studies in the meta-analyses. It also requires that, across the studies, the size of these sex differences in judges' ratings relate positively to the the actual sex difference outcomes in the experiments. Such relationships between judges' ratings and the outcomes of the studies can be examined statistically via meta-analytic techniques such as Hedges and Olkin's (1985) continuous models. Illustrating this use of judges to rate relevant aspects of experiments is Eagly and Steffen's (1986) meta-analysis of sex differences in aggression. Students rated descriptions of each of the aggressive behaviors examined in the studies in the meta-analysis. These students imagined that they carried out each of the behaviors and then estimated (a) how much anxiety or guilt they would feel, (b) how much harm they would do to the other person, and (c) how much danger they themselves would probably face--from retaliation, for example. In general, women reported they would feel more guilty and anxious if they behaved in these ways and that they would cause more harm to the victim. Women also believed that aggression presented more potential danger to themselves as aggressors. For those behaviors for which these sex differences in beliefs were especially large, sex differences in aggression were especially large, as assessed by the effect sizes of these studies. These correlational findings thus fit the idea

that people's beliefs about the consequences of aggression regulate their aggressive behavior. Because of sex-differentiated prior experiences, women, more than men, have a negative attitude toward aggression, as shown by their belief that aggression has bad consequences for themselves and others.

Using judges to assess mediating variables in studies included in a meta-analysis is informative but of course presents various hazards. It may be that the relevant information from which to judge important aspects of process is not retrievable from the original studies. Even if such data is available, we cannot assume that such judgments are unbiased or that the judgments of 1980s college students exactly reproduce the perceptions of the subjects who participated in studies conducted at earlier dates.

One criterion for accuracy of social judgments is how well they correspond to behavior. As I just mentioned, on a correlational basis, these ratings correspond in expected ways with the obtained effect sizes. There have been instances, however, when the absolute level of such judgements were not consistent with the sex difference outcomes obtained in the original studies. For example, in Eagly and Crowley's (1986) meta-analysis on helping behavior, male and female judges did not differ in their ratings of the likelihood they would perform helping behaviors and that average men and women were not thought to differ in the likelihood that they would help. Nonetheless, in the studies in the meta-analysis, men helped more than women. Overall, then, the data suggest that judges' ratings provide useful approximations to, if not exact reproductions of, the mediating variables specified by social-role theory.

Research Validity and Gender Roles in Natural Settings

Meta-analytic studies should enable us to develop more valid

generalizations about women and men (see Eagly 1986, 1987). As a general rule, both construct validity and external validity are greater for findings based on meta-analytic aggregations of studies than for findings of single studies. For construct validity, this superiority stems from the derivation of meta-analytic generalizations from a set of studies, which most often have utilized differing operational definitions of the dependent variable of interest. If these operationalizations are contaminated by different irrelevant sources of variation, these irrelevant sources tend to cancel one another when findings are aggregated and consequently the aggregated finding has more satisfactory construct validity. Similarly, the superior external validity of conclusions based on aggregated findings arises from the broader range of persons, settings, and occasions on which these conclusions are based.

The validity of meta-analytic generalizations is threatened when investigators in a given research literature have approached problems in limited ways. In social psychology one source of such threats is researchers' emphasis on short-term encounters with strangers in the laboratory or field. In most of the research relevant to sex differences, there is little attention to studying behavior in long-term or close relationships or in organizations, where most of everyday life transpires. As a result, the effects of gender roles are typically not examined in the context of alternate roles of research participants. Taking these other roles into account may greatly affect our understanding of sex difference findings.

For example, a recent meta-analysis on men's and women's reports of positive well-being by Wood, Rhodes, and Whelan (1988), found that women tend to report higher levels of happiness than men. Although there are a variety of

mechanisms which could account for this effect, respondents' marital role provided one plausible explanation. The studies in our sample with relatively few married participants obtained no sex difference; studies with a high percent of married participants obtained greater happiness of women. The sex difference in happiness thus appears to be associated with the roles of husband and wife. It is interesting to note that sociologists have uncovered a comparable finding with judgments of negative well-being. Women tend to report more negative affect and depression than men. Yet this appears to be obtained primarily with married respondents; wives report more negative affect and symptomatology than husbands. Taken together, research on positive and negative well-being implies that wives experience both greater advantages and disadvantages with marriage than husbands do. In general, when role enactment varies according to sex, observed sex differences in behavior may most accurately be explained in terms of these other roles.

Role theory also suggests when behavior will be a function of gender roles and when it will follow from other roles. In natural settings, when men and women are assigned the same formal role, role requirements other than gender roles are likely to be salient and the sexes may well behave similarly. For example, a man and a woman who are managers at the same level in an organization may engage in similar behavior to carry out their jobs. In contrast, in laboratory contexts, gender roles should be highly salient because other, competing roles are typically not present. Consequently, we may find that sex differences in behavior appear stronger in laboratory than in natural settings.

This reasoning was tested in a recently completed meta-analysis by Eagly and Johnson (1988) on sex differences in leadership style in organizational and research settings. If organizational roles rather than gender roles determine leadership style in organizational settings, sex differences should be small in the organizational studies. Based on what we know about sex differences in other social behaviors, sex differences should be larger and stereotypic in other settings--namely, in laboratory experiments comparing male and female leaders and in assessment studies in which men and women not selected as leaders responded to leadership style instruments. This pattern was obtained for the two most heavily researched aspects of leadership style--interpersonal orientation and task orientation. Measures of interpersonal orientation assess leaders' concentration on what can be called maintenance of interpersonal relationships--that is, tending to the morale and welfare of the people in the work setting. Measures of task orientation assess leaders' concentration on task accomplishment--that is organizing activities to get assigned tasks done (display Table 1). In the organizational studies, there was no overall sex difference. In the small-group experiments and the assessment studies, women were more concerned with social relationships than men were. For task orientation (display Table 2), in organizational studies, there was no overall sex difference, whereas in the small-group and assessment studies, men were somewhat more concerned with the task than women were. However, the largest overall sex difference was obtained on measures of a different sort--the tendency to be democratic and participative or autocratic and directive in one's approach to leadership. This sex difference did not disappear for the organizational leaders. It was about the same magnitude for organizational

leaders as for other men and women. Thus, the leadership style meta-analysis provides partial but not complete support for the idea that sex differences disappear in organizational settings where behavior is under the control of constraining roles such as occupational roles.

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Table 1

Interpersonal Orientation Sex Differences

Type of study	Mean effect size	Number of effect sizes
Organizational	-0.01	120
Small group	0.37	4
Assessment	0.25	12

Note. Positive effect sizes indicate women more oriented to interpersonal relations than men.

Table 2

Task Orientation Sex Differences

Type of study	Mean effect size	Number of effect sizes
Organizational	-0.02	120
Small group	0.19	7
Assessment	0.08	12

Note. Postive effect sizes indicate men are more task-oriented than women.